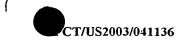
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What is Claimed is:

1. An assay for detecting a single nucleotide polymorphism in an organism comprising:

amplifying a nucleic acid sequence of an organism using a hairpin shaped primer that discriminates between different alleles by situating its 3' nucleotide at the location of a single nucleotide polymorphism; and

measuring threshold cycle or amplification efficiency or amount of amplified product wherein a lower amplification efficiency or delayed threshold cycle or a difference in the amount of amplified product is indicative of a mismatch between the primer and the organism and a single nucleotide polymorphism in the organism.

- 2. The assay of claim 1 wherein the nucleic acid sequence of the organism is amplified by PCR.
 - 3. The assay of claim 2 wherein the PCR performed is real-time PCR.
 - 4. The assay of claim 2 wherein amplicon production is measured at the completion of the PCR reaction.
- 5. The assay of claim 1 wherein the hairpin shaped primer comprises DNA.
 - 6. The assay of claim 1 wherein the hairpin shaped primer comprises RNA.
- 7. The assay of claim 1 wherein the hairpin shaped 25 primer comprises PNA.
 - 8. An assay kit for detecting a single nucleotide polymorphism in an organism comprising a hairpin shaped primer that discriminates between different alleles by situating its 3' nucleotide at the location of a single nucleotide polymorphism.
- 9. The assay kit of claim 8 wherein the hairpin shaped primer comprises DNA.
 - 10. The assay kit of claim 8 wherein the hairpin shaped primer comprises RNA.

11. The assay kit of claim 8 wherein the hairpin shaped primer comprises PNA.